

Report

Phase III – Comprehensive Wastewater Management Plan and Final Environmental Impact Report

Nantucket, Massachusetts

Volume I of III

Prepared for:

Nantucket Department of Public Works
188 Madaket Road
Nantucket, Massachusetts 02554-2623

Prepared by:

Earth Tech, Inc.
196 Baker Avenue
Concord, Massachusetts 01742-2167

March 2004

27355

**Phase III - Comprehensive Wastewater Management Plan
and Final Environmental Impact Report**

Nantucket, Massachusetts

Volume I of III

Prepared for:

Nantucket Department of Public Works
188 Madaket Road
Nantucket, Massachusetts 02554-2623

Prepared by:

Earth Tech, Inc.
196 Baker Avenue
Concord, Massachusetts 01742-2167

March 2004

March 31, 2004

Dear Project Reviewer:

Enclosed please find one copy of the report entitled "Comprehensive Wastewater Management Plan and Final Environmental Impact Report Phase III (Phase III Report) completed in accordance with the Massachusetts Department of Environmental Protection's "Guide to Wastewater Management Planning" dated January 1996. The review of the Comprehensive Wastewater Management Plan (CWMP)/Environmental Impact Report (EIR) will be through the submission of three documents including: (1) Phase I Report; (2) Phase II CWMP/Draft EIR; and (3) Phase III CWMP/Final EIR.

This Phase III Report is consistent with the general requirements of the MEPA regulations including being circulated per MEPA regulations at 301 CMR 11.16 (3). In addition, six (6) copies will be available for public review at the Selectmen and Town Clerk's Offices in the Town Hall, Department of Public Works, Nantucket Land Council, Nantucket Planning and Economic Development Commission and at the Antheneum (Public Library). The complete Report can also be accessed through the Town's website at www.nantucket-ma.gov. The circulation list is included in Section 7 of the Phase III Report.

A public hearing on the Phase III Report will be initiated by a notice of availability for review in the Environmental Monitor. A responsiveness Summary will be completed as a result of the Public Hearing and included in the permanent record.

If you have questions regarding this project, please do not hesitate to contact the MEPA office at 617-626-1000.

Very truly yours,
Earth Tech, Inc.

Thomas E. Parece, P.E.
Senior Program Director

enclosures

Table of Contents

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
LETTER OF TRANSMITTAL	ES-1
EXECUTIVE SUMMARY	v
LIST OF FIGURES	vi
LIST OF TABLES	
 1.0 INFORMATION UPDATE REQUEST OF THE PHASE I MEPA CERTIFICATE	
A. NEEDS ANALYSIS DISCUSSION UPDATE.....	1-1
1. Introduction.....	1-1
2. First Stage Analytical Approach - Rating Criteria Matrix	1-1
3. Second Stage Analytical Approach - Soils, Groundwater and Age/Lot Evaluation	1-3
4. Results of Needs Analysis	1-8
B. WASTEWATER FLOW UPDATE	1-26
C. DISPOSAL SITE ALTERNATIVES	1-29
D. WATER SUPPLY	1-29
E. PLANNING FOR GROWTH (EXECUTIVE ORDER #385)	1-29
 2.0 IDENTIFY AND DISCUSS ALTERNATIVES FOR WASTEWATER DISPOSAL	
A. INTRODUCTION	2-1
B. OPTIMIZE OPERATION AND MAINTENANCE OF EXISTING ON-SITE SYSTEMS.....	2-1
1. Repair/Upgrade Existing On-Site Systems	2-2
2. Conventional Title 5 System.....	2-4
C. WASTEWATER COLLECTION, TREATMENT AND DISPOSAL ALTERNATIVES	2-6
1. Flow and Waste Reduction	2-6
2. Decentralized Facilities.....	2-12
3. Analysis of On-Site Alternatives	2-34
4. Configurations and Alternative Sewer Systems.....	2-37
5. Wastewater Treatment, Disposal, Reuse and Land Applications	2-41
6. Existing Wastewater Infrastructure.....	2-63
7. Existing Wastewater Treatment Facilities	2-71
8. Potential Reuse Opportunities.....	2-95
9. Residuals Disposal and Reuse	2-98

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

<u>Section</u>	<u>Page</u>
D. WASTEWATER REUSE FOR ARTIFICIAL RECHARGE.....	2-107
1. General.....	2-107
2. General Requirements for Wastewater Usage for Artificial Recharge	2-107
3. Wastewater Treatment Levels and Technologies	2-110
4. Wastewater Recharge/Drinking Water Reuse Experience.....	2-117
E. STORMWATER MANAGEMENT AND GROUNDWATER RECHARGE INITIATIVES	2-124
F. SHORT LIST OF ALTERNATIVES	2-125
1. General.....	2-125
2. Technical Considerations.....	2-127
3. Environmental Benefits	2-130
4. Economic Considerations	2-131
5. Water Balance Impacts	2-132
3.0 SCREENING OF SITES FOR TREATMENT AND/OR DISPOSAL	3-1
A. CRITERIA DEVELOPMENT.....	3-12
B. SITE IDENTIFICATION	3-12
1. General.....	3-16
2. Surfside Wastewater Treatment Facility.....	2-16
3. FAA Site – Massasoit Bridge Road	3-17
4. UMASS Site	3-17
5. Quidnet – No. 1 Site	3-17
6. Quidnet – No. 2 Site	3-17
7. Pocomo Road Site.....	3-17
8. Milestone Road – “Clear-Cut Site”	3-18
9. Tom Nevers – Naval Station Site.....	3-18
10. Siasconset WWTF Site	3-18
11. Airport Site	3-18
12. Wauwinet Road Site	3-18
13. Wauwinet – Quidnet Roadways.....	3-18
14. State Forest Site	3-19
15. Madaket – Warren’s Landing Area Roadways.....	3-19
C. PRELIMINARY SITE SCREENING	3-19
1. Environmentally Sensitive Areas.....	3-19
2. Archaeological and Historical Resources	3-19
3. MCP Phase I Site Assessment	3-20
4. Soil Suitability and Geologic Evaluation.....	3-20
5. Sensitive Receptors.....	3-20
6. Hydrogeologic Evaluations.....	3-20
7. Historical Shoreline Analysis at Surfside WWTF	3-22

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

<u>Section</u>	<u>Page</u>
D. IDENTIFICATION OF FEASIBLE SITES BASED ON SCREENING ANALYSIS.....	3-22
E. SUMMARY	3-25
4.0 EVALUATION OF SHORT LISTED ALTERNATIVES	
A. ENVIRONMENTAL EVALUATION.....	4-1
1. Introduction.....	4-1
2. Evaluation	4-1
3. Recommendations based on Environmental Evaluation Criteria.....	4-6
B. EVALUATION OF COSTS	4-9
1. Project Costs	4-9
2. Operation and Maintenance Costs	4-13
3. Wastewater Treatment Facilities Alternative Costs	4-15
4. Collection and Transmission Alternative Costs.....	4-16
C. INSTITUTIONAL ARRANGEMENTS	4-26
1. General.....	4-26
2. Institutional and System Management Procedures	4-28
D. RESIDUALS DISPOSAL	4-31
E. LOCATION OF FACILITIES.....	4-31
1. Madaket WWTF – FAA Site	4-31
2. Surfside WWTF Expansion	4-32
3. Needs Areas	4-32
F. PHASED CONSTRUCTION	4-33
G. FLEXIBILITY AND RELIABILITY	4-34
H. IMPLEMENTATION CAPABILITY	4-34
I. REGULATORY, DESIGN AND RELIABILITY REQUIREMENTS.....	4-35
5.0 RECOMMENDED PLAN	
A. DETAILED RECOMMENDED PLAN	5-1
1. Introduction.....	5-1
2. Study Areas.....	5-15
3. Wastewater Treatment Facilities	5-42
4. Existing Pump Stations.....	5-43
5. Evaluation and Mapping Project.....	5-47
B. INSTITUTIONAL IMPACTS.....	5-47

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

<u>Section</u>	<u>Page</u>
C. ENVIRONMENTAL IMPACTS.....	5-47
1. General.....	5-47
2. Historical, Archaeological, Cultural, Conservation and Recreation	5-47
3. Wetlands, Flood Plains and Agricultural Lands	5-48
4. Zones of Contribution of Existing and proposed Water Supply Sources	5-48
5. Surface and Groundwater Resources Including Nantucket and Madaket Harbor Watersheds.....	5-48
6. Displacement of Households, Businesses and Services.....	5-48
7. Noise Pollution, Air Pollution, Odor and Public health Issues Associated with Construction and Operation	5-49
8. Violation of Federal, State or Local Environmental and Land Use Statutes or Regulations and Plans Imposed by Such Statutes and Regulations.....	5-49
9. Changes if Development and Land Use Patterns	5-49
10. Pollution Stemming from Changes in Land Use	5-49
11. Damage to Sensitive Ecosystems.....	5-49
12. Socioeconomic for Expansion	5-49
D. CAPITAL, OPERATION AND MAINTENANCE COSTS.....	5-50
1. Capital Costs	5-50
2. Operation and Maintenance Costs	5-53
E. IMPLEMENTATION PLAN	5-55
6.0 FINAL ENVIRONMENTAL IMPACT REPORT	
A. PROJECT DESCRIPTION.....	6-1
1. General.....	6-1
2. Summary	6-1
3. Needs Areas	6-2
4. Disposal Site Alternatives.....	6-2
5. Threshold Exceedances.....	6-2
B. WATER SUPPLY	6-2
1. General.....	6-2
2. Existing Conditions.....	6-2
3. Proposed Water Use.....	6-3
C. MITIGATION MEASURES	6-6
D. EXECUTIVE ORDER 385/PLANNING FOR GROWTH.....	6-7

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

<u>Section</u>	<u>Page</u>
7.0 REVIEW OF PUBLIC PARTICIPATION PROGRAM	
A. GENERAL.....	7-1
B. PUBLIC MEETING	7-2
C. RESPONSIVENESS SUMMARIES	7-4
D. SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE MEPA PROCESS	7-4
E. CIRCULATION LIST	7-5
8.0 SRF GRANT/LOAN ADMINISTRATION	8-1

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1 Typical Lot Configuration	1-6
2-1 Conventional Title 5 System.....	2-5
2-2 Typical STEP System	2-14
2-3 Subsurface Cluster System	2-15
2-4 Recirculating Sand Filter	2-20
2-5 Amphidrome™ Process	2-22
2-6 Bioclere™ System	2-24
2-7 Cromaglass® System.....	2-26
2-8 RUCK® System.....	2-29
2-9 Single Home FAST®.....	2-30
2-10 Typical Grinder Pump Unit	2-39
2-11 Surfside WWTF Flows and Precipitation	2-78
2-12 Watershed Sub-Basins	2-140
3-1 Potential Wastewater Treatment and/or Disposal Sites	3-13
3-2 Natural Resources and Environmentally Sensitive Areas.....	3-15
5-1 Madaket Study Area	5-3
5-2 Warren's Landing Study Area	5-5
5-3 Somerset Study Area.....	5-6
5-4 Shimmo Study Area.....	5-11
5-5 Monomoy Study Area.....	5-13
5-6 Wastewater Treatment Facility Locations	5-17
5-7 Surfside WWTF Site Location.....	5-19
5-8 Surfside WWTF Process Layout	5-20
5-9 Siasconset WWTF Site Location.....	5-30
5-10 Siasconset WWTF Process Layout.....	5-31
5-11 Madaket WWTF Site Location.....	5-36
5-12 Madaket WWTF Process Layout.....	5-37
5-13 Capital Improvement Program – FY 2004-2014	5-49

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1-1	Rating Criteria Points Per Developed Lot..... 1-4
1-2	Rating Criteria..... 1-9
1-3	Study Area Long Term Wastewater Disposal Option..... 1-27
1-4	Estimated Wastewater Flows by Study Area 1-28
1-5	Estimated Wastewater Flows by Wastewater Treatment Facility..... 1-29
2-1	Summary of Monitoring Results Versus Treatment Requirements 2-32
2-2	Summary of Water Quality Criteria For Class B Streams 2-44
2-3	Proposed Effluent Limitations 2-47
2-4	Class 1 Groundwater Permit Standards 2-48
2-5	Areas Required For Surface Application of Treated Effluent 2-49
2-6	Areas Required For Subsurface Application of Treated Effluent..... 2-49
2-7	Wastewater Pumping Stations Survey Summary..... 2-66
2-8	Massachusetts Groundwater Discharge Permit No. 1-200 Limits 2-74
2-9	Surfside WWTF Design Data 2-75
2-10	Surfside WWTF Wastewater Flows (1999 through 2002) 2-77
2-11	Surfside WWTF Performance – 1999..... 2-80
2-12	Surfside WWTF Performance – 2000..... 2-81
2-13	Surfside WWTF Performance – 2001..... 2-82
2-14	Surfside WWTF Performance – 2002..... 2-83
2-15	Surfside WWTF Serviceability Ratings..... 2-84
2-16	Surfside WWTF Evaluation of Process Equipment – Headworks..... 2-85
2-17	Surfside WWTF Evaluation of Process Equipment – Primary Clarifiers..... 2-85
2-18	Surfside WWTF Evaluation of Process Equipment – Solids Handling Building..... 2-87
2-19	Surfside WWTF Evaluation of Process Equipment – Sludge Management Building..... 2-88
2-20	Surfside WWTF Evaluation of Process Equipment – Odor Control 2-90
2-21	Surfside WWTF Evaluation of Process Equipment – CEPT Building..... 2-91
2-22	Surfside WWTF Evaluation of Process Equipment – Miscellaneous..... 2-92
2-23	Alternative Summary 2-126
2-24	Water Withdrawals 2-134
2-25	Water Balance Impacts - 2001 Annual 2-135
2-26	Water Balance Impacts - 2001 Summer..... 2-136
2-27	Water Balance Impacts- 2025 Annual 2-137
2-28	Water Balance Impacts - 2025 Summer..... 2-138
3-1	Criteria Description..... 3-2
3-2	Existing Conditions and Site Features 3-14
3-3	Results of Preliminary Screening..... 3-23
3-4	Wastewater Treatment and/or Disposal Sites 3-26
4-1	Innovative/Alternative System Evaluation 4-7
4-2	Connection to the Existing System Evaluation..... 4-8
4-3	Communal System Evaluation..... 4-10
4-4	Surfside WWTF Alternatives - Estimated Construction Costs..... 4-15
4-5	Madaket Study Area Alternatives - Estimated Project Costs, Operation and Maintenance Costs and Present Worth Costs 4-18

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

<u>Table</u>	<u>Page</u>
4-6 Monomoy Study Area Alternatives - Estimated Project Costs, Operation and Maintenance Costs and Present Worth Costs	4-19
4-7 Somerset Study Area Alternatives - Estimated Project Costs, Operation and Maintenance Costs and Present Worth Costs	4-21
4-8 Shimmo Study Area Alternatives - Estimated Project Costs, Operation and Maintenance Costs and Present Worth Costs	4-23
4-9 Warren's Landing Study Area Alternatives - Estimated Project Costs, Operation and Maintenance Costs and Present Worth Costs	4-25
5-1 Summary of Recommended Plan.....	5-16
5-2 Typical WWTF Effluent Permit Requirements	5-25
5-3 Surfside WWTF Wastewater Flows	5-26
5-4 Surfside WWTF Design Criteria	5-33
5-5 Siasconset WWTF Design Criteria	5-39
5-6 Madaket WWTF Wastewater Flows.....	5-40
5-7 Madaket WWTF Design Criteria.....	5-50
5-8 Summary of Estimated Project Costs For CWMP/FEIR Recommendations.....	5-51
5-9 Summary of Estimated Project Costs For Evaluation and Mapping Recommendations	5-54
5-10 Estimated Operation and Maintenance Costs For CWMP/FEIR Recommendations	5-55
5-11 Estimated Operation and Maintenance Costs For Evaluation and Mapping Recommendations	5-56
5-12 Capital Improvement Plan For CWMP/FEIR Recommendations	5-57
5-13 Capital Improvement Plan For Evaluation and Mapping Recommendations.....	6-4
6-1 Warren's Landing Study Area Water Use Design Conditions	6-4
6-2 Somerset Study Area Water Use Design Conditions	6-5
6-3 Shimmo Study Area Water Use Design Conditions	6-6
6-4 Monomoy Study Area Water Use Design Conditions	

Executive Summary

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

EXECUTIVE SUMMARY

In 1998, the Nantucket Department of Public Works retained Earth Tech, Inc. to prepare an Island-wide Comprehensive Wastewater Management Plan/Environmental Impact Report (CWMP/EIR) to identify areas within the Island with sub-surface wastewater disposal problems and to develop a plan to mitigate or eliminate the problems. The Town established a special procedure for the review of this major and complicated project. This special procedure is a three-phase process during which the scope of future phases is based largely on the results of the preceding phase. The process consists of filing three documents: (1) Phase I, Needs Analysis; (2) Phase II, Alternatives and Site Identification and Draft Environment Impact Report; and (3) Phase III, Comprehensive Wastewater Management Plan and Final Environmental Impact Report. The results of the three-phase plan are included in this Document. This Document provides the basis for the design and ultimate implementation of the approved plan.

This Document contains the results of extensive efforts by Earth Tech, Inc. and the Town of Nantucket to evaluate the available options for improving the existing on-site wastewater disposal systems. In order to obtain as much information as possible on the existing and projected land use, demographic conditions and population, Earth Tech Inc., coordinated efforts with the Nantucket Planning and Economic Development Commission (NP&EDC) and the Massachusetts Estuary Project (MEP). The goals of the NP&EDC's, "The Nantucket Comprehensive Plan", coupled with the on-going Massachusetts Estuary Project (MEP) have been utilized in evaluations and analyses for the community presented in this Document and have been an integral force in the formation of the final recommendations herein.

The MEP is currently gathering data in the Nantucket Harbor and Sesachacha Pond areas in order to provide technical data relative to the maximum amount of nitrogen (nitrogen threshold) that each estuary can tolerate without adversely changing its character and use. Madaket Harbor is also being studied but at a different target date than the above-mentioned areas. MEP will set the target to be achieved in order to protect and restore the health of the estuaries. Study areas affected by the MEP include Wauwinet, Quidnet, Pocomo, and Polpis. Until the MEP data is completed, these areas are recommended to continue using on-site wastewater disposal systems managed under a Septage Management Plan. Once the MEP data is complete, these areas will be further evaluated for long-term recommendations.

NANTUCKET, MASSACHUSETTS CWMP/EIR – PHASE III REPORT

A recommended solution is being made for Madaket in this Report, which has been classified as a Need Area based on multiple criterion identified in the Phase I Report. The MEP in the Madaket Harbor area will further define the need for reducing nitrogen loadings to the estuaries here. This could mean redefining the wastewater treatment level necessary to meet the goals of the MEP in Madaket. The CWMP/EIR is an evolving and acquiescent process. It is recommended that the Town continue the coordination of efforts on Island with the MEP.

Other agencies utilized for information and considered herein are U.S. Soils Conservation Services, U.S. Department of Agriculture, U.S. Coast Guard, local planning officials, the Nantucket Historic Commission, the Natural Heritage Program, and local Town boards including Assessors, Building Department, Board of Health, Public Works Department, Zoning Officials, Conservation Commission and Nantucket Planning and Economic Development Commission.

The Phase I, Needs Analysis was completed and filed with MEPA in August 2001. An Environmental Notification Form (ENF) was filed with MEPA in October of 2001. The Phase I Document determined the areas on Island incapable of sustaining long-term, on-site wastewater disposal systems throughout and beyond the 20-year planning period. There were ten Study Areas identified as Needs Areas:

Madaket	Shimmo
Monomoy	Pocomo
Pocomo	Polpis
Polpis	Warrens Landing
Quidnet	Wauwinet

See the map at the end of this Executive Summary for a description of the challenges and solutions for each of the ten identified Study Areas.

The Phase II, Alternatives and Site Identification, was completed and filed with MEPA in September 2003. The Phase II Document analyzed the selected alternatives in accordance with the revised scope that was issued by the Secretary of EOEA and comments received on the Phase I CWMP/EIR document.

The Phase II CWMP/DEIR document contains the preliminary investigation into the viability of siting wastewater treatment facility(s) and/or highly treated wastewater effluent disposal facilities on Nantucket. Site selection, for both the wastewater treatment facilities (WWTFs), and the effluent disposal field(s) is the most difficult to resolve. The screening criteria presented in this section were developed to assess the

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

viability of 14 sites identified within Nantucket as potential wastewater treatment facility and/or wastewater disposal facility sites. The screening criteria used to evaluate these potential project sites were based upon eleven environmental criterion. The environmental screening criteria were chosen based upon review by the Project Proponent and upon comments received by the Proponent in the Secretary of the Executive Office of Environmental Affairs Certificate on the ENF dated October 2001. It was determined that by applying the screening criteria to the 14 identified sites a short list of selective potential sites would be established for additional evaluation through field testing. The screening criteria chosen to evaluate the potential project sites are: (1) wetlands; (2) soils; (3) drinking water supply - wellhead protection areas (Zone I and Zone II); (4) fisheries (including shellfish areas); (5) waterbodies (distance from surface water); (6) floodplains; (7) sensitive habitats; (8) park lands; (9) recreational resources; (10) agricultural/historical interests; (11) shoreline change data; and (12) in or adjacent to an Area of Critical Environmental Concern.

Wastewater treatment options were evaluated based on four levels of criteria. The first criterion, Technical Factors, included flow and loading, land/site requirements, suitability for groundwater discharge, climate, sludge disposal and ease of operation. The second criterion, Environmental Factors, included groundwater and permitting impacts. The third criterion, Institutional Factors, included community acceptance, regulatory and legal issues. The fourth criterion, Economic Factors, included construction cost and operations cost. Various wastewater treatment technologies were evaluated based on the above criteria and the Town of Nantucket's goals regarding the operation and maintenance of the facilities.

The Phase II CWMP/DEIR document presents recommendations for wastewater management in the above-mentioned ten identified areas of the Town of Nantucket where existing on-site wastewater disposal systems are shown to be inadequate for long-term wastewater disposal. Specific recommendations by Study Area have taken into account the appropriateness of utilizing: (1) innovative alternative systems; (2) communal systems; and (3) local wastewater collection, treatment, and disposal facilities. The Phase II CWMP/DEIR document evaluated the environmental impacts, technical design, institutional factors, and project costs associated with each alternative and recommends the appropriate solution to the wastewater disposal problems in the Town of Nantucket on a long term basis, with the exception of those areas included in the MEP Study Areas.

NANTUCKET, MASSACHUSETTS CWMP/FEIR – PHASE III REPORT

The Phase II CWMP/DEIR document recommends that the Town of Nantucket upgrade the existing Surfside Wastewater Treatment Facility, construct a new Madaket Wastewater Treatment Facility and provide sanitary sewer via low pressure sewers and/or gravity sewers to five needs areas (Madaket, Monomoy, Shimmo, Somerset and Warrens Landing), and to prepare a Septage Management Plan for the remainder of the Island. The recommended plan is the most environmentally sound and cost-effective alternative, and insures the sustainability of Nantucket's water resources for centuries to come. The recommended plan is proposed to be designed and constructed over a twelve-year period and has been divided into seven construction phases. The construction phases were developed based on: (1) the need of an area to be serviced; (2) funding constraints; and (3) minimizing construction related disruptions within the Town. The capital cost of the recommended plan is estimated at \$92.1 million and includes construction, engineering (design and construction), legal, fiscal, administrative, and contingency costs for providing sanitary sewerage to the five needs areas, and the construction of the Surfside WWTF upgrade and Madaket WWTF. The CWMP/EIR is a dynamic and flexible long-term planning document, therefore, the Town has the opportunity to incorporate any additional information that is developed by Federal, State and/or Local authorities and/or private entities prior to the implementation of the recommendations, if appropriate.

The Secretary issued the MEPA Certificate for the Phase II, EOE Number 12617, on December 1, 2003.

After filing the Phase II CWMP/DEIR on October 30, 2003, the Town of Nantucket entered into an Administrative Consent Order (ACO), ACOP-BO-03-1G002, with the DEP in the matter of the Surfside Wastewater Treatment Facility. The implementation schedule contained in this Phase III Document coincides with the schedules detailed in the ACO. The complete ACO is included in Appendix A.

In addition to the CWMP/EIR, the Town has been involved with an Evaluation and Mapping project for its wastewater and stormwater infrastructures. The project involves the review, investigation and mapping of the infrastructures and recommended rehabilitation/upgrades required based on existing and future needs. The capital cost of the recommended plan is estimated at \$83.4 million and includes construction, engineering (design and construction), legal, fiscal, administrative, and contingency costs over a 20-year planning period. One of the major parts of the Evaluation and Mapping project is the initial investigation of infiltration/inflow within the existing wastewater infrastructure and recommendations to reduce excessive groundwater from entering the wastewater collection system. Since the Evaluation and Mapping project is scheduled to be completed in the Summer of 2004, adjustments to the recommendations and associated estimated capital costs may be necessary.

**NANTUCKET, MASSACHUSETTS
CWMP/FEIR – PHASE III REPORT**

This Phase III, Comprehensive Wastewater Management Plan and Final Environmental Impact Report (CWMP/FEIR) is the final result of all comments received on the Phase II Report through the MEPA process as well as comments received during multiple public informational meetings and workshops held on the Island and incorporates the provisions contained in the Surfside ACO. The Phase III, CWMP/FEIR, contains the final recommended plan for long-term wastewater collection, treatment and disposal as well as all associated costs for users and non-users. A Septage Management Plan is completed in draft form for those areas on Island determined to be long-term sustainable with on-site wastewater disposal systems.

These projects have spearheaded the Town's efforts to develop a long-term Capital Improvement Program that incorporates not only the recommendations from the CWMP/EIR and Evaluation and Mapping projects, but other Town Department budget expenditures as well. This proactive agenda will allow the Town to act fiscally responsible and ensure the long-term sustainability of the Island while protecting the environment and sole source aquifer at the same time both of which are direct goals the State's Watershed Initiative.

In summary, both the CWMP/EIR and Evaluation and Mapping projects are dynamic and flexible long-term planning documents that leave opportunities open to modifications by the Town to incorporate any additional information that is developed by Federal, State and/or Local authorities and/or private entities prior to the implementation of the recommendations, if appropriate.

Challenge:
Evaluate alternatives for a 20-year solution to wastewater collection, treatment and disposal needs of the Town.

Solution:
An Island-wide study to maintain and/or improve environmental conditions while determining costs, benefits for long-term sustainability, protection of the sole source aquifer and public health, and preservation of Nantucket Harbor, Madaket Harbor, Polpis Harbor and Sesachacha Pond.

Area of Wastewater Disposal Need Based on Wellhead Overlay Protection Zone

Town WPZ

Challenge

- Wellhead Protection Zone
- Private Water Supply & Wastewater Disposal
- Connect into Existing Wastewater System

Area of Wastewater Disposal Need Based on Harbor Watershed Line

Pocomto

Challenge

- Nantucket Harbor Watershed
- High Groundwater
- Private Water Supply & Wastewater Disposal
- Septage Management Plan

Monomoy

Challenge

- Nantucket Harbor Watershed
- Private Water Supply & Wastewater Disposal
- Connect into Existing Wastewater System

Shimmo

Challenge

- Nantucket Harbor Watershed
- Private Water Supply & Wastewater Disposal
- Connect into Existing Wastewater System

Madaket

Challenge

- Small Dense Lots
- Madaket Harbor Watershed
- Private Water Supply & Wastewater Disposal
- Decentralize Wastewater Treatment

Polpis

Challenge

- Nantucket Harbor Watershed
- Degradation of Polpis Harbor
- High Groundwater
- Private Water Supply & Wastewater Disposal
- Septage Management Plan

Quidnet

Challenge

- Small Dense Lots
- Private Water & Wastewater Disposal
- Septage Management Plan

Somerset

Challenge

- Small Dense Lots
- Private Water & Wastewater Disposal
- Connect into Existing Wastewater System

Warrens Landing

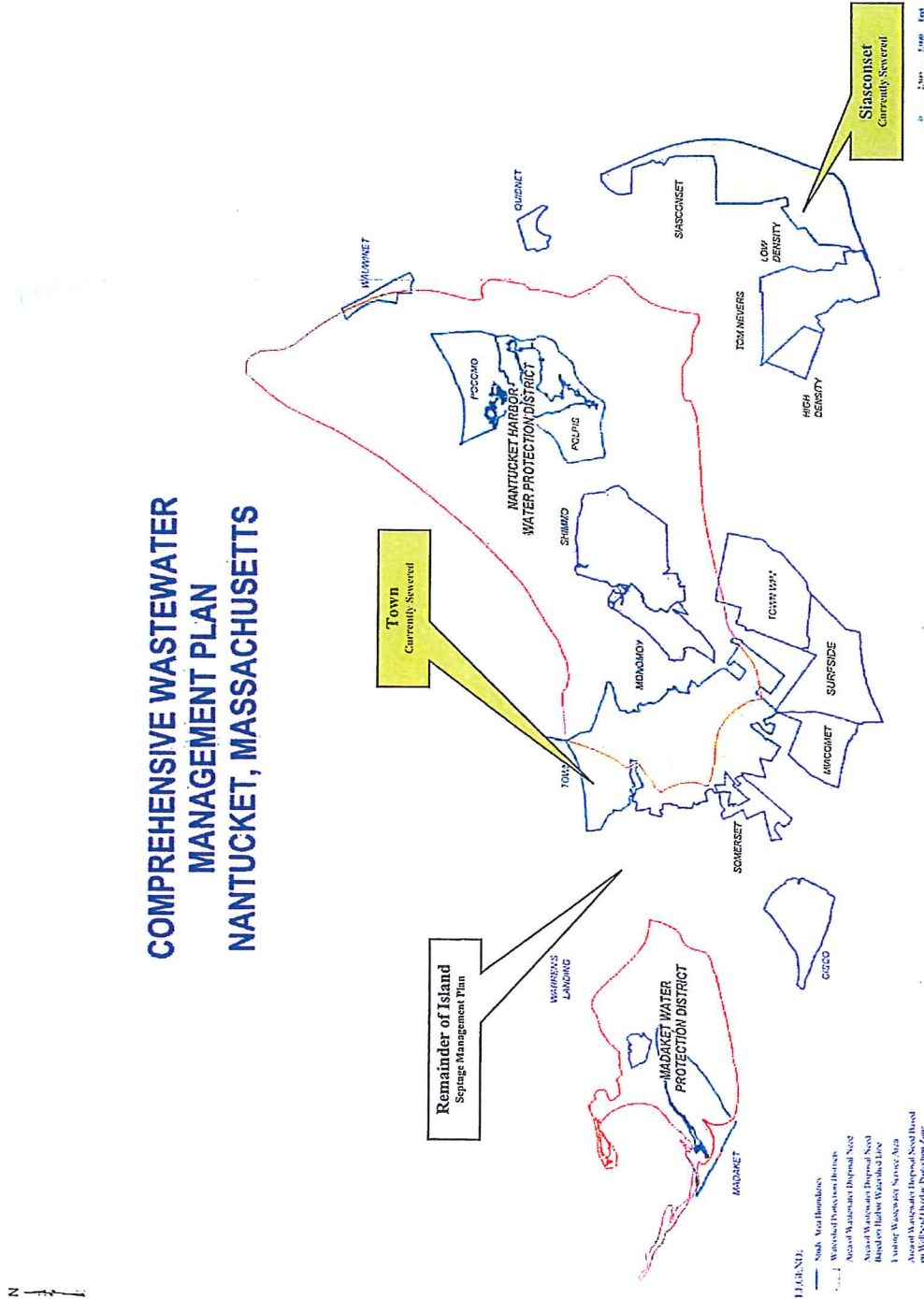
Challenge

- Nantucket Harbor Watershed
- Small Dense Lots
- Private Wastewater Disposal
- Decentralize Wastewater Treatment

Wauwinnet

Challenge

- Small Dense Lots
- Private Water Supply & Wastewater Disposal
- Septage Management Plan



Area of Wastewater Disposal Need

Prepared For: Town of Nantucket, Department of Public Works, 188 Madaket Road, Nantucket, MA 02554
For Additional Information Contact: Mr. Jeffrey Willett, Director, Department of Public Works, 508-228-7244
Prepared By: Earth Tech, Inc., 196 Baker Avenue, Concord, MA 01742, Contact: Mr. Thomas Parece, P.E., 978-371-4142
Date Prepared: June 2003 (Revised: March 2004)